

REMARKS

Claims 1-49 are pending in the application with claims 22-35 currently under examination. Claims 1-21 and 36-49 have previously been withdrawn from consideration as being directed to a non-elected invention. Claims 22, 24 and 30 have been amended. Support for the amendments can be found, for example, on page 10, lines 8-15, and page 17, line 25, to page 18, line 11. Accordingly, these amendments do not raise an issue of new matter and entry thereof is respectfully requested. Applicants have reviewed the rejections set forth in the pending Office Action, and respectfully traverse all grounds for the reasons that follow.

Rejections Under 35 U.S.C. § 112, Second Paragraph

Claims 22 and 23 stand rejected under 35 U.S.C. § 112, second paragraph, for being indefinite allegedly because the phrase “said determination in step (c)” lacks clarity. Applicants have amended claim 22 to correct antecedent basis to refer to step (d) instead of step (c). Accordingly, the ground of rejection is moot in claim 22, as well as in dependent claim 23. Withdrawal of the rejection is respectfully requested.

Rejections Under 35 U.S.C. § 102

Claims 22-35 stand rejected under 35 U.S.C. § 102(b) as allegedly anticipated by Stoughton et al. (U.S. Patent No. 6,132,969). Applicants respectfully maintain, for the reasons of record, that the claimed methods are novel over Stoughton et al.

Independent claim 22, as amended, is directed to a method for assigning a cellular function to a component of a biochemical system by (a) physically perturbing a component of a network in a reference biochemical system; (b) determining a multidimensional coordinate point representative of a statistically characterized data element of two or more components of a perturbed biochemical system, the multidimensional coordinate point comprising values for the data element for each of n components, wherein n corresponds to the number of measured biochemical components within a biochemical or constituent system; (c) comparing the multidimensional coordinate point to a reference data element region, and (d) determining if the multidimensional coordinate point is within or outside the reference data element region, and (e) providing an output to a user of the determination in step (d), wherein a multidimensional

coordinate point outside of the reference data element region indicates that the component is linked to the perturbed biochemical network, and is thereby assigned a cellular function of the network.

Independent claim 24, as amended, is directed to a method for assigning a cellular function to a component of a biochemical system by (a) determining a multidimensional coordinate point representative of a statistically characterized data element of a set of two or more components in a biochemical network of a physically perturbed biochemical system, the multidimensional coordinate point comprising values for the data element for each of n components, wherein n corresponds to the number of measured biochemical components within a biochemical or constituent system; (b) comparing the multidimensional coordinate point to a network-associated reference expression region of the set of components, and (c) determining if the multidimensional coordinate point is outside of the network-associated reference expression region, and (d) providing an output to a user of the determination in step (c), wherein a multidimensional coordinate point outside of the network-associated reference expression region indicates a perturbed state of the network, the component being linked to the perturbed network and thereby being assigned a cellular function of the network.

Independent claim 30, as amended, is directed to a method for assigning a cellular function to a component of a biochemical system by (a) determining a multidimensional coordinate point representative of a statistically characterized data element of a set of two or more components in a biochemical pathway of a physically perturbed biochemical system, the multidimensional coordinate point comprising values for the data element for each of n components, wherein n corresponds to the number of measured biochemical components within a biochemical or constituent system; (b) comparing the multidimensional coordinate point to a pathway-associated reference expression region of the set of components, and (c) determining if the multidimensional coordinate point is outside of the pathway-associated reference expression region, and (d) providing an output to a user of the determination in step (c), wherein a multidimensional coordinate point outside of the pathway-associated reference expression region indicates a perturbed state of the pathway, the component being linked to the perturbed pathway and thereby being assigned a cellular function of the pathway.

Applicants respectfully maintain, for the reasons of record, that Stoughton et al. does not teach the claimed methods, in which a multidimensional coordinate point representative of a statistically characterized data element of two or more components of a perturbed or physically perturbed biochemical system is determined. As discussed previously on the record, Applicants respectfully disagree with the assertion in the Office Action that “microarrays inherently involve mRNA locations containing x and y dimensions (multidimensional coordinate points with statistically characterized data elements) for components of a physically perturbed system.” As discussed previously on the record, the “x and y coordinates” of an array are locations of arrayed material such as mRNA on the array. Thus, the x and y coordinates of a given mRNA is clearly the position of the mRNA on the two-dimensional array. However, the physical position of an mRNA on an array clearly has no relationship to a data element, as asserted in the Office Action on page 4. As taught in the specification, a “data element” is a value or analytical representation of factual information that describes a characteristic or a physicochemical property of a component of a biochemical system (page 28, line 26, to page 29, line 2). Thus, a data element is a value representative of a characteristic or property of a component. In contrast, the x and y values relating to the position of a particular mRNA on an array has no relationship to the mRNA as being representative of a characteristic or property of the mRNA. To the contrary, the x and y values relating to the position of an mRNA on an array provide nothing more than information on the arbitrary location of the mRNA on the array, not a characteristic or property of the mRNA.

In contrast to Stoughton et al., a multidimensional coordinate point, as recited in the claims, is representative of a statistically characterized data element of two or more components. As exemplified in Figure 1, which shows multidimensional coordinate points in three dimensions for three components, each of the multidimensional coordinate points comprises values for the data element for each of the n (three) components. In contrast and as discussed above, the x and y coordinates of an mRNA on an array, as asserted in the Office Action to be a multidimensional coordinate point as described in Stoughton et al., clearly are arbitrary positions on a two-dimensional array but do not represent values of a characteristic or property of a component. Furthermore, the position of a given mRNA on an array relates only to that mRNA, i.e. “component.” However, Stoughton et al. provides no teaching of a multidimensional coordinate

point representative of a statistically characterized data element of two or more components, as recited in the claims. Absent such a teaching, Stoughton et al. cannot anticipate the claims.

Applicants respectfully maintain that the claimed methods are novel over Stoughton et al. Accordingly, Applicants respectfully request that this rejection be withdrawn.

In light of the amendments and remarks herein, Applicants submit that the claims are in condition for allowance and respectfully request a notice to this effect. Should the Examiner have any questions, she is invited to call the undersigned attorney.

To the extent necessary, a petition for an extension of time under 37 C.F.R. 1.136 is hereby made. Please charge any shortage in fees due in connection with the filing of this paper, including extension of time fees, to Deposit Account 502624 and please credit any excess fees to such deposit account.

Respectfully submitted,

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